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A hierarchical spatio-temporal model for delta smelt

Abstract: Work in progress on a life history based model for delta smelt is presented. There are several unique features of the modeling approach that distinguish this work. One is the inclusion of space in a model for the population dynamics, thus allowing for region- and time-specific effects. Another is the inclusion of data from multiple fish surveys at a far less aggregated level than previous work. A third feature is the construction of the population dynamics in a building block manner with distinct sub-processes for survival, reproduction, and movement. Lastly, model formulation has been guided by the primary goal of developing a management tool for assessing after-the-fact, and predicting beforehand, the effects of various management actions on population viability.

Statement of Relevance: Model formulation has been guided by management goals, to restore the delta smelt population, and by various management actions aimed at restoration. In particular, the model has been designed to help answer questions about the effects of various management actions on delta smelt viability.